

607 MISCELLANEOUS FENCING**607.01 CHAIN LINK FENCE**

- (A) **DESCRIPTION.** Work consists of furnishing, fabricating, assembling, and erecting chain link fencing along property line and/or adjacent to a roadway. The fence shall be erected to the lines, grades, and height as shown in the contract documents or as directed by the Chief Engineer. Unless otherwise provided a top rail shall be used for a property fence and tension wire shall be used for the top of a fence adjacent to a roadway.

Work shall include clearing the fence line and disposing of resulting brush and debris, removal of high points in the existing ground between posts; connecting fences to other structures or existing fences, and other incidental work necessary to complete the specified work.

(B) **MATERIALS.**

Portland Cement Concrete Class F (for post footings) – [801.01](#) and [817](#)

Barbed Wire – [813.01](#)

Chain Link Fence Fabric – [813.03\(A\) \(1\)](#)

Chain Link Fence Components – [813.03\(A\) \(2\)](#) and [813.03\(A\) \(3\)](#)

Gates – [813.03\(A\) \(4\)](#)

Wood for Redwood Slats – [822.12](#)

The height and type of fence shall be as specified in the contract documents. When the type of chain link fence is not specified, one of the following types shall be used, meeting the requirements of [813.03](#) and AASHTO M 181 and shall include all chain link fence materials, including fence fabric, posts, rails, ties, bands, bars, rods, hardware and other fittings.

Type I: Zinc-coated steel; fabric, posts, hardware, and fittings.

Type II: Aluminum-coated steel: fabric and zinc coated posts, hardware, and fittings.

Type III: Aluminum-alloy: fabric, posts, hardware, and fittings.

Type IV: Polyvinyl Chloride (PVC)-coated: fabric.

Type I shall be used unless otherwise specified.

Chain link fence fabric shall be made of No. 9 gauge wire, woven in a 2 x 2 inch diamond mesh.

All pipe components shall be standard weight pipe of the following nominal diameters:

Intermediate or line posts – 2 inches End, corner and pull posts – 2-1/2 inches Top rails and post braces – 1 1/4 inches Tension bars and wires – No. 7 gauge

Posts for swing gates shall be standard weight steel pipe of for single swing gates or one leaf of double gates and of the size indicated in the DDOT Standard Drawings or in the

contract documents. Gates shall be complete with hinges, latches, stops and other necessary fittings.

Barbed wire, when specified, shall be of the 4-point pattern, composed of 2 strands of No.12-1/2 gauge line wires with No.14 gauge barbs spaced on approximately 5 inch centers. Barbed wire shall conform to the requirements of AASHTO M 280.

(C) CONSTRUCTION REQUIREMENTS. Installation shall be by skilled mechanics experienced in the erection of this type of fence. Details not specified herein shall meet the requirements of the standard drawings and the contract documents. Construction shall be as follows:

1. The Contractor's activities and operations shall be confined to the area immediately adjacent to the right-of-way lines and within the right-of-way except that permission may be granted by the Chief Engineer for normal construction activities through lands owned by or under the control of the District.

In areas where any privately owned fence or other property is within the District's right-of-way, these items shall be removed by the property owner in advance of the District's Contractor commencing work; however, in the event that the property owner has not removed these items, the Contractor shall remove these items and place them on the owner's property as directed by the Chief Engineer. The Contractor shall be held responsible for any damage to privately owned items removed.

Fence lines specified in the contract documents serve as a guide only, and the exact location of the fence shall be determined in the field, as directed by the Chief Engineer.

2. The posts shall be set plumb in concrete footings as shown on the plans, spaced not more than 8 feet on centers. The minimum cross-section dimension of the footings shall not be less than 3 times the maximum cross-sectional dimension of the post, but in no case less than 9 inches for line posts and no less than 12 inches for end or corner posts.
3. The top rails shall be provided with expansion shield couplings or other suitable devices approximately every 20 feet. The couplings are to be outside sleeve type at least 7 inches long. Expansion spring couplings are to be installed at 100 foot intervals on sections over 100 feet long. The top rail shall pass through the base of the line post tops and form a continuous brace from end to end, and shall be securely fastened to the end and/or corner posts with heavy pressed steel connections.
4. The wire fabric shall be fastened to the end and/or corner posts using a tension bar fastened to the posts with pressed steel bands. The bands are to be connected with carriage bolts and nuts. The fabric is to be stretched to proper tension and fastened to all line posts with wire clips and to the top rail with tie wires. The wire fabric is to be attached to a bottom tension wire with hog rings. The bottom of the fabric is to be held as uniformly as is practical to 2 inches above the finished grade.
5. Any excavation or backfill required to comply with the above clearance shall be as approved by the Chief Engineer. Fence fabric shall be placed on the roadside of the

posts. For storm water management ponds, the fabric shall be placed on the outside of the posts or the side farthest from the pond.

6. The fence shall be taut and true.
7. All end and/or corner posts shall be braced by a horizontal post brace. The post brace shall be securely attached to the end or corner post, to the posts adjacent to expansion couplings, and to the next adjacent line post midway between the top rail and the ground. This brace shall be truss-braced from the line post to the end or corner post with a truss rod complete with tightening unit. Corner posts and line posts, at intervals of 500 feet, shall be trussed and braced in both directions.
8. All posts shall be plumbed and spaced as uniformly as practicable to the spacing specified in the standard drawings or the contract documents with a tolerance of 2 feet.

End or corner posts shall be installed at all terminals, abrupt changes in grade and at changes in horizontal alignment greater than 15 degrees. The maximum distance between end or corner posts shall be 500 feet.

Post lengths shall accommodate the fabricated width of the fence fabric without stretching or compressing the fabric and provide the required spacing below the bottom of the fabric.

Post caps are required at all line, end and corner posts.

9. Gate frames shall be constructed of standard weight pipe with heavy malleable iron or pressed steel corner fittings securely riveted. Fabric to match the fence shall be installed in the frame by means of tension bars and hook bolts. Each frame shall be equipped with adjustable truss rods. Bottom hinges shall be ball and socket type designed to carry the weight of the gate on the post footing. Upper hinge shall be wraparound adjustable type. All gates shall be equipped with a positive type latching device with provisions for padlocking. All drive gates shall be provided with center plunger rod, catch, and semiautomatic outer catches to secure gates in opened position.
10. All posts shall be equipped with malleable, cast iron or pressed steel ornamental tops or extension arms for barbed wire as shown in the standard drawings or in the contract documents. Tubular post tops are to be so designed as to exclude moisture from the post. All intermediate post tops shall be designed to hold the top rails.
11. When barbed wire is specified, it shall be stretched to proper tension and securely fastened to the framework members by the use of heavy wire pins.
12. Where fencing crosses a drainage ditch, a line post shall be set on each side of the ditch so that the bottom of the fence is low enough to preclude the possibility of anyone climbing underneath. No post shall be set in a drainage ditch unless indicated in the contract documents. Posts shall be fitted with tops as shown on the plans, or other approved tops so designed as to fit securely over the posts and carry the top tension cable.
13. When the fence crosses electrical transmission, distribution or secondary lines, a ground shall be installed at each crossing, in accordance with Section 9 of the National Electrical Code.

- (D) **MEASURE AND PAYMENT.** The unit of measure will be the linear foot. The number of linear feet will be the actual length of Chain Link Fence, complete in place, measured horizontally along the fence from center to center of end posts. Gates will be measured on the basis of the count or number of each type or size installed complete.

Payment will be made at the contract unit price per linear foot, which payment will include the fabricating and furnishing of all materials, including barbed wire if used, labor, tools, equipment, and incidentals necessary to complete the work.

Gates will be paid for at the contract unit price per each type or size as counted, which payment will include the fabricating and furnishing of all materials, including barbed wire if used, labor, tools, equipment, and incidentals necessary to install the gate or gates complete in place.

607.02 VINYL CLAD CHAIN LINK FENCE WITH REDWOOD SLATS

- (A) **DESCRIPTION.** Work consists of the fabricating, furnishing, assembling, and erecting Vinyl Clad Chain Link Fence with Redwood Slats. The Vinyl Clad Chain Link Fence with Redwood Slats shall be constructed to the lines and grades shown in the contract documents.
- (B) **MATERIALS.** All materials shall meet the requirements of [607.01\(B\)](#) unless otherwise specified on the standard drawings and/or in the contract documents.
- (C) **CONSTRUCTION REQUIREMENTS.** Installation shall be by skilled mechanics experienced in the erection of this type fence. Details shall meet the requirements of the standard drawings and/or the contract documents.
- (D) **MEASURE AND PAYMENT.** The unit of measure will be the linear foot. The number of linear feet will be the actual length of Vinyl Clad Chain Link Fence with Redwood Slats, complete in place, measured horizontally along the fence from center to center of end posts. Gates will be measured on the basis of the count or number of each type or size installed complete.

Payment will be made at the contract unit price per linear foot, which payment will include the fabricating and furnishing of all materials, labor, tools, equipment, and incidentals necessary to complete the work.

607.03 SAFETY FENCE SHIELDING

- (A) **DESCRIPTION.** Work consists of the fabricating, furnishing, assembling, and erecting safety fence shielding on bridges and overpasses. The shield shall be constructed to the lines and grades and height shown in the contract documents.
- (B) **MATERIALS.** All materials shall meet the requirements of [607.01\(B\)](#), except as modified herein.

All posts shall be standard weight pipes, 2-1/2 inches I.D.

Top rails and post braces shall be standard weight pipe, 1-1/4 inches I.D.

Plates shall meet the requirements of ASTM A 36.

Anchor bolts shall meet the requirements of ASTM A 307, Grade A.

(C) CONSTRUCTION REQUIREMENTS. Installation shall be by skilled mechanics experienced in the erection of this type fence. Details not specified herein shall meet the requirements of the standard drawings and/or the contract documents. Construction shall be as follows:

1. The Contractor's activities and operations shall be confined to the area immediately adjacent to the right-of-way lines and within the right-of-way except that permission may be granted by the Chief Engineer for normal construction activities through lands owned by or under the control of the District.

Fence lines specified in the contract documents serve as a guide only and the exact location of the fence shall be determined in the field as directed by the Chief Engineer.

2. The posts shall be set plumb and as shown in the contract documents.
3. The top rails shall be provided with expansion couplings at each expansion joint in the structure.

The couplings are to be inside sleeve type at least 7 inches long and suitably welded to the rail. Expansion couplings shall be galvanized after welding.

4. The wire fabric shall be fastened to the end and/or corner posts using tension bar fastened to the posts with pressed steel bands. The bands are to be connected with carriage bolts and nuts. The fabric is to be stretched to proper tension and fastened to all line posts with wire clips and to the top rail with tie wires. The wire fabric is to be attached to a bottom tension wire with hog rings. The bottom of the fabric is to be held as uniformly as is practical to 2 inches above the finished grade.
5. All end and/or corner posts shall be braced by a horizontal brace. The post brace shall be securely attached to the end or corner post, to the posts adjacent to expansion couplings, and to the next adjacent line post midway between the top rail and the ground. This brace shall be truss-braced from the line post to the end or corner post with a truss rod complete with tightening unit. Corner posts and line posts, at intervals of 500 feet, shall be trussed and braced in both directions.
6. The fence shall be taut and true.
7. All posts shall be plumbed and spaced as uniformly as practicable to the spacing specified in the standard drawings and/or in the contract documents with a tolerance of 2 feet.

Post lengths shall accommodate the fabricated width of the fence fabric without stretching or compressing the fabric.

Post caps are required for all line, end and corner posts.

8. Welding shall conform to the requirements of [706.18](#).

(C) MEASURE AND PAYMENT. The unit of measure for Safety Fence Shielding will be the linear foot. The actual length of Safety Fence Shielding measured horizontally along the fence from center to center of end posts, will be paid for at the contract unit price per

linear foot, which payment will include the fabricating and furnishing of all materials, labor, tools, equipment and incidentals necessary to complete the work.

607.04 CONSTRUCTION BOARD FENCE (SOLID WOOD FENCE)

- (A) **DESCRIPTION.** Work includes furnishing, installing, maintaining, relocating and removing 8-foot high board fencing around the construction area as shown on the contract plans and as directed by the Chief Engineer. The board fence shall be painted (all sides) with a neutral shade of green color paint approved by the Chief Engineer. Maintenance will include, but not limited to, any repainting or repairing as directed for the duration of the contract.

The fence shall be constructed with 1 x 6 inch boards and with 2 x 4 inch top and bottom horizontal brace members, and supported by 4 x 4 inch posts at a maximum spacing of 8 feet apart. Posts shall be set in augered holes or driven a minimum depth of 2 feet into the ground. Each post shall be braced by a 2 x 4 inch brace member meeting each post at a 45 degree angle and placed in the ground to a depth of approximately 2 feet. Lumber shall be Grade No. 2 common square cut. The Chief Engineer shall approve the materials before and after installation.

Each tree not scheduled for removal but which may be damaged by construction activity on this project shall, upon the direction of the Chief Engineer, be protected by tree boxes of a minimum size of 6 feet square and 8 feet high. Trees enclosed by the work area board fence may be protected as directed. Hand excavation shall be used beneath the low branches of trees where the use of mechanical equipment might be injurious to tree limbs.

- (B) **MEASURE AND PAYMENT.** The unit of measure will be the linear foot of fence installed, and measured along the top edge of the fence including gates and tree boxes as needed.

Payment for Construction Board Fence will include gates and tree boxes as needed and be made at the contract unit price per linear foot installed, which payment will include all materials, erection, hardware, locks and keys, tree boxes, painting, repainting, maintenance, repair and removal, and all labor, tools, equipment and incidentals needed to complete specified work.

607.05 TEMPORARY FENCE

- (A) **DESCRIPTION.** Work consists of the installation of temporary fence for work zone pedestrian and site protection. The Contractor shall be required to protect the work area as shown on the contract plans or as directed by the Chief Engineer. The Contractor shall furnish all materials. Work under this item includes furnishing, installing, relocating (if necessary), removal and disposal of the fence.
- (B) **MATERIALS.** Fencing shall be of a type used for temporary protection and shall have a minimum height of 3 feet 6 inches. Posts shall be steel "U" channel posts, 3 pounds per foot, and either galvanized or painted.
- (C) **CONSTRUCTION METHODS.** Installation of the fence shall be performed prior to commencement of construction, or at a time required by the Chief Engineer.

Where indicated in the contract documents, erosion and sediment control measures shall be installed as approved by the Chief Engineer. Removal and disposal of the fence shall be done at a time during and/or after restoration of property, as required by the Chief Engineer.

- (D) **MEASURE.** The unit of measure for Temporary Fence will be the linear foot. The number will be the actual number of linear feet of fence installed complete, as measured along the base of the fencing.
- (E) **PAYMENT.** Payment for Temporary Fence will be made at the contract unit price per linear foot, which payment will include furnishing all materials such as fencing, posts, hardware and straw bales, installing, relocating if necessary, and removal and disposal and all labor, materials, tools, equipment and incidentals needed to complete work specified herein.

607.06 ORNAMENTAL SAFETY FENCE

- (A) **DESCRIPTION.** Work consists of the fabrication, furnishing, assembling, and erection of ornamental safety fence on bridges and overpasses. The ornamental fence shall be constructed to the lines and grades and height as shown in the contract drawings.

(B) **MATERIALS.**

Plates shall meet the requirements of AASHTO M183.

Anchor bolts shall meet the requirements of ASTM A 307, Grade A.

For post heights up to 60 inches

For post heights over 60 inches and less than 96 inches

For post heights greater than 96 inches

The fence shall be designed to be free standing and to withstand all applicable wind, pedestrian and bicycle loadings. If required in the contract documents, appropriate railings shall be designed and attached to the fence as per the most current ADA and bicycle requirements. Prior to fabrication, the Contractor shall submit for approval shop drawings, calculations and material samples to the Chief Engineer.

The fence panels shall be electro-forged steel fencing consisting of 31/32 inch x 1/8 inch main bar, 3/16 inch round cross bar and 2-7/16 inches x 5-3/16 inches mesh. Fence shall be galvanized as per ASTM 123 and/or powder polyester coated. The color shall be matte bronze.

(C) **CONSTRUCTION REQUIREMENTS.**

Installation shall be by skilled mechanics experienced in the erection of this type of fence. Construction shall be as follows:

1. Posts shall be set plumb and as shown in the contract documents. For post heights up to 60 inches, the post size shall be 2-1/2 inches x 5/16 inch flat bar; for post heights greater than 60 inches and less than 96 inches, the post size shall be 3-1/2 inches x 5/16 inch flat bar; and for post heights greater than 96 inches, the post shall be 2 inch square tube.

2. The rails shall be 2 ½ inches x 2 ½ inches x 3/16 inch. The base plates shall be 8 inches x 8 inches x ¾ inch. The top rails shall be provided with expansion couplings at each expansion joint in the structure.
 3. Welding shall be as per Section [706.18](#).
- (D) **MEASURE AND PAYMENT.** The unit of measure for Ornamental Safety Fence will be the linear foot. The actual length of fence measured horizontally along the fence from center to center of end posts will be paid for at the contract unit price per linear foot, which payment will include the fabrication and furnishing of all materials, tools, equipment and incidentals necessary to complete the work.